



Civil Aviation Authority – DofE Skill Activity Logbook

Quality in Aviation

Participant name: _____

Participant age: _____

eDofE ID: _____

DofE Level (Bronze, Silver, Gold): _____

Start Date: _____



DURATION
3 months



MATERIAL REQUIRED
Pen and paper (optional)

The Duke of Edinburgh's Quality in Aviation 3 Months

Thank you for choosing the Quality in Aviation course through the UK Civil Aviation Authority. We are passionate about on sharing our knowledge with the next generation of talent to enter the aviation industry and giving you the opportunity to learn a new talent. This course will contain an awareness of Quality and its applications, including key skills such as methods of assurance, creating consistent supply and fostering a culture of performance.

The below is a series of signposts of work that can be undertaken in any order. Each activity should last a minimum of one hour per week for the minimum time suggested. This course is designed for Bronze level award lasting 3 months (13 weeks) and can also be used to combine to achieve Silver and Gold awards.

After completion of the course please confirm you have done so by emailing dofe@caa.co.uk with your eDofE ID so we can process your skills award.

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You may fill the sheet digitally, or handwrite answers before scanning them for submission.

1

Defining Quality in Aviation

We are usually exposed to the word 'Quality' through marketing or in an off-hand comment about something that is 'good.' Though what does Quality really mean and what does it mean in aviation?

<https://www.quality.org/what-quality>

<https://asq.org/quality-progress/articles/what-is-quality?id=3944a2adfd33497bb8c5a7a59acf759c>

1. To begin, use products and items you are familiar with and consider what about those items makes them a 'good' and 'reliable' product – why did you want that over another, competing product?

2. Then research the general meaning of Quality and how it can be applied within the aviation sector.

Note: Quality is not exclusive to products! We can have Quality in services, experiences...



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2

How has Quality helped to build the aviation industry?

Since the first inaugural flight by the Wright brothers on 17th December 1903, considerable progress has been made in the world of aviation.

Not only have materials changed, so has the technology that propels the planes and the accessibility and cost of the travel.

<https://www.britannica.com/technology/history-of-flight>

<https://www.icao.int/about-icao/History/Pages/default.aspx>

<https://www.icao.int/Meetings/FutureOfAviation/Pages/default.aspx>

1. Research the history of aviation from its initial inception to the modern day and identify what you think the key milestones are in the development of the industry.
2. How do you think Quality has influenced aviation's advancement. What in the industry may be different without the application of Quality?

Note: To understand how large the aviation industry is – have a look at all the live flights in the world at this exact moment in time!

<https://www.flightradar24.com/51.50,-0.12/6>

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3

Standards and Regulations – optional requirements and legal mandates

Quality is subjective – what works for one industry may not for another. The aviation industry has its own standards and regulations – in order to meet them, you will need to know what they are and what they are for.

<https://thisvsthat.io/regulation-vs-standard>

1. What is the difference between a standard and a regulation?
Why do you think regulations are needed?
2. How aware were you of the standards and regulations within the aerospace industry?
What could be done to improve public awareness?

Note: Quality is a preference... standards and regulations define 'minimum' requirements. Though each business will define what Quality means to them.

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4

What standards are present in aviation? Why were they created?

Now knowing the difference between standards and regulations – it is important to know which standards are applicable in the types of business that Quality is being applied in.

<https://iaqg.org/standard/9100-qms-requirements-for-aviation-space-and-defense-organizations/>

1. Through research, find an example standard the following businesses may choose to be certified against:

- Component Manufacturer.
- Design Organisation.
- Component Stockist.
- Airline.
- Maintenance Organisation.



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What regulations are present in aviation? Why were they created?

Now knowing the difference between standards and regulations – it is important to know which regulations are applicable in the types of business that Quality is being applied in.

<https://www.caa.co.uk/uk-regulations/>

<https://www.icao.int/sustainability/pages/economic-policy.aspx>

<https://aviation.stackexchange.com/questions/1210/what-is-the-difference-between-icao-jaa-faa-easa-and-cao>

1. Through research, find an example regulation the following businesses may choose to be certified against:
 - Component Manufacturer.
 - Design Organisation.
 - Component Stockist.
 - Airline.
 - Maintenance Organisation.
2. What are some of the world's regulatory organisations?

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Methods to assure Quality in aviation manufacture and assembly

Standards and regulations require objective evidence that you are compliant in order to be certified. The same is true when physically manufacturing or building products.

<https://www.inspec-bv.com/marketing/product-inspection/how-to-choose-the-right-product-inspection-guide>

<https://safetyfirst.airbus.com/functional-check-flights-3-4-planning-and-preparing-a-functional-check-flight/>

1. What ways could you assure that the following has been achieved?

- A product component has been machined correctly to drawing.
- An assembly has been completed in line with its design.
- That an aircraft has been fully assembled and is ready for flight.

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7

Where to buy items and how your requirements are met (suppliers)

At nearly every stage of production, materials, services, or consumables need to be bought and used. As such, they need to meet a certain specification or standard in order to be used to ensure what is produced is compliant. Often companies will pre-approve vendors depending on what items they are supplying.

Usually, these come with some form of assurance document like a Certificate of Conformance or an Airworthiness Release (Form 1).

<https://vnvis.com/certificate-of-conformance-what-you-need-to-know/>

<https://www.caa.co.uk/media/kg1krs55/caa-form-1-mo.pdf>

1. How would you control supplies of products, services, and consumables into a business?
2. What sort of assurance of conformity would you expect for what types of parts and products?

Note: There are unique requirements for releasing parts as 'airworthy,' requiring specific approvals and agreements to sign-off on a 'Form 1'.

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8

Building a Quality System

Structure and consistency in a business is critical to providing reliable outputs to a defined Quality.

These are laid out in some form of Quality or Business System, defining policies, roles and responsibilities, procedures, documents, and evidence of compliance to defined standards and regulations.

<https://asq.org/quality-resources/quality-management-system>

1. What are the key components to a successful Quality Management System?
2. What do you think are the challenges of operating a Quality Management System and why do you think they are important for consistency?

Note: There is no one way to create a QMS... it is about finding the right solution for the business based on size, complexity, product(s) etc.

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Potential Quality challenges and obstacles

The application of Quality can create challenges in understanding, compliance and agreement. For instance, Human Factors are key contributors to our daily lives that outline our ability to perform as humans.

<https://humanfactors101.com/about/what-is-human-factors/>

<https://www.youtube.com/watch?v=L9Dz4f4wGno&t=3s>

1. Research what aspects and common issues people find in the application of Quality inside of businesses.
2. What measures, mitigations or plans could you put in place to minimise their impact or likelihood?
3. Where else may influences such as human factors be applied outside of Quality in your daily life?

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Cultures and Values – establishing behaviours

Successful application of Quality is achieved through an established culture, shared values and creating appropriate behaviours.

https://en.wikipedia.org/wiki/Impact_of_culture_on_aviation_safety

<https://www.caa.co.uk/general-aviation/the-ga-unit/just-culture/>

<https://www.eurocockpit.eu/positions-publications/positive-organisational-culture-aviation>

1. What are some examples of cultures in the world? How are they represented in and can influence business cultures?
2. What would be some important shared values needed to work and operate in aviation? What is the culture of aviation?



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Goals and Objectives – can everything be measured?

It is important that we know we are being successful in the application of Quality. Though we may struggle with finding some objective measures either because the technology does not exist, it is unknown what the outcome may be or that measuring it changes the outcome.

1. What are the key measures in aviation for knowing that Quality is working?
2. Can you identify some key businesses within aviation with a good reputation?
3. What measures would you use working in aviation to know if Quality was effective? (If money, resource, and technology were all available to support!)

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12

What does it all mean? How is Quality perceived by the public?

Quality is often perceived as arbitrary rules because people are rarely told why certain actions or tasks are important.

Few people understand the complexity of the world around them and how Quality holds it together.

Speak to your friends, family, and teachers – ask them:

1. What do they think Quality is?
2. What do they know about aviation?
3. What is an example they would use as a Quality product or service.



A large, empty rectangular box with a dark blue border, intended for handwritten answers to the questions listed above.

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What do you need to be in Quality in Aviation?

There are many different roles that directly work within Quality, though every role supports and works within it.

<https://www.quality.org/article/quality-profession>

<https://www.quality.org/typical-competence-profiles>

<https://www.quality.org/the-profession-map/profession-map>

1. Using the links provided and some research, what are some examples of Quality roles within aviation?
2. What skills would you need to work within the roles?

Congratulations on completing the logbook!